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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/800,904	03/08/2001	Byung-hee Kim	SEC.467D	8021
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JONES VOLENTINE, L.L.C.			EXAMINER	
12200 SUNRISE VALLEY DRIVE, SUITE 150 RESTON, VA 20191			ESTRADA, MICHELLE	
			ART UNIT	PAPER NUMBER
			2823	
			DATE MAILED: 04/02/2003	

Please find below and/or attached an Office communication concerning this application or proceeding.

Application No. Office Action Summary Examiner Michelle Estrada 2823 - The MAILING DATE of this communication appears on the cover sheet with the correspondence address Period for Reply A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION. Extensions of time may be available under the protections of 3°C FR 1.13(e), in no event, however, may a reply be timely filed after scribe (MONTH Short mis maning state of the scribmandations, which is the scribe of the protection of 3°C FR 1.13(e), in no event, however, may a reply be timely filed after scribe (MONTH Short mis maning state of the scribmandations, which is the scribe of the protection of 3°C FR 1.13(e), in no event, however, may a reply be timely filed after scribe (MONTH Short mis maning state of the scribmandations), which is the scribe of the scribmandation of the protection of the drawing(s) be held in abeyance. See 37 CFR 1.85(a). 11) The proposed drawing correction filed on is/are via protection of the drawing(s) be held in abeyance. See 37 CFR 1.85(a). 11) The proposed drawing correction filed on is/are protection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). 11) The proposed drawing correction filed on			gh gh				
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THE MAILING DATE OF THIS COMMUNICATION. Editations of time may be switched work the provided and the FSX (6) MONTHS from the mailing date of this communication. Editations of time may be available used the provided of this communication. It No perced to reply is specified above, the maximus datatory period with pay and will expise (x) (6) MONTHS from the mailing date of this communication. Failure to reply within the set or extended period for reply will, by abutlory edition to become ARANDONED (30 U.S. 5, 133). Any may received by the Office the Table have morthed and the remaining date of this communication, even if timely filed, may reduce any Status 1) Responsive to communication(s) filed on 13-20. 2a) This action is FINAL. 2b) This action is FINAL. 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213. Disposition of Claims 4) Claim(s) 13-20 is/are pending in the application. 4a) Of the above claim(s) is/are withdrawn from consideration. 5) Claim(s) 13-20 is/are rejected. 7) Claim(s) is/are allowed. 6) Claim(s) is/are allowed. 6) Claim(s) is/are allowed. 7) The specification is objected to by the Examiner. 10) The drawing(s) filed on is/are: a) cocepted or b) objected to by the Examiner. Application Papers Application Papers The drawing(s) filed on is/are: a) cocepted or b) objected to by the Examiner. 11) The proposed drawing correction filed on is/are: a) approved by disapproved by the Examiner. 12) The cath or declaration is objected to by the Examiner. 13 provided the proposed drawing correction filed on is/are: a) approved by disapproved by the Examiner. 14 proposed drawing correction filed on is/are: a) approved by disapproved by the Examiner. 15 proposed drawing correction filed on is/are: a) approved by the Examiner. 16 proposed drawing or the priority documents have been received. 2 Certified copies of the priority docume	The MAILING DATE of this communication app Period for Reply	ears on the cover sheet with the c	orrespondence address				
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DETAILED ACTION

Applicant's arguments are moot on view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Larson et al. (5206,788) and Desu et al. (5,817,170).

Larson et al. disclose forming a lower electrode (20); forming a ferroelectric layer (30a) on the lower electrode; forming a ferroelectric layer (30b) on the ferroelectric layer (30a); forming a ferroelectric layer (30c) on the ferroelectric layer (30b); annealing the resulting structure (Col. 4, lines 61-68); and forming an upper electrode (40) on the ferroelectric layer (30c); wherein forming a ferroelectric layer comprises forming a PZT ferroelectric layer (Col.4, line 35).

Larson et al. do not disclose forming a lower seed layer and an upper seed layer; wherein the forming the upper and lower seed layers includes using a material having a crystallization temperature lower than that of a material for forming the ferroelectric layer; wherein the forming the upper and lower seed layers includes using a ferroelectric material having a lattice constant similar to that of a material for forming the ferroelectric layer; wherein the forming the upper and lower seed layers includes using PZT having

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at least one of a higher Pb content and a higher Ti composition ratio than a PZT to be used to form the ferroelectric layer; wherein the forming the lower electrode and the upper electrode includes using a Pt-group metal layer.

Desu et al. disclose forming a seed layer (20); forming a ferroelectric layer (30) of PZT; forming an upper seed layer (40) and annealing the resultant structure including completing a perovskite crystal structure on the ferroelectric layer (Col. 2, lines 55-65 and Col. 4, lines 50-58); wherein the forming the upper and lower seed layers includes using a material having a crystallization temperature lower than that of a material for forming the ferroelectric layer; wherein the forming the upper and lower seed layers includes using a ferroelectric material having a lattice constant similar to that of a material for forming the ferroelectric layer; wherein the forming the upper and lower seed layers includes using PZT having at least one of a higher Pb content and a higher Ti composition ratio than a PZT to be used to form the ferroelectric layer; wherein the forming the lower electrode and the upper electrode includes using a Pt-group metal layer.

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Larson et al. and Desu et al. to enable formation of the perovskite crystal structure.

Claims 19-20 rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Larson et al. and Desu et al. as applied to claims 13-18 above, and further in view of Hsu et al. (6,048,738).

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The combination does not disclose further comprising, prior to forming the lower electrode, forming a switching element to be electrically connected to the lower electrode; and further comprising before forming the lower electrode providing a semiconductor substrate; and forming a gate insulating layer on the semiconductor substrate, and after the forming the upper electrode forming source and drain regions in a portion of the semiconductor substrate adjacent to a periphery of the gate insulating layer.

Hsu et al. disclose providing a semiconductor substrate; and forming a gate insulating layer (72) on the semiconductor substrate, forming a polysilicon layer (74); forming a lower electrode (76); forming a ferroelectric layer (78); forming an upper electrode (80) and after the forming the upper electrode forming source and drain regions in a portion of the semiconductor substrate adjacent to a periphery of the gate insulating layer (Col. 5, lines 24-32); and forming a switching element to be electrically connected to the lower electrode (See fig. 9).

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Larson et al., Desu et al. and Hsu et al. to enable formation of the ferroelectric structure and further provides the final elements to the structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Estrada whose telephone number is (703) 308-0729. The examiner can normally be reached on Monday through Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722

for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

George Fourson
Primary Examiner
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VIC ∕IEstrada

March 26, 2003